Katherine E. O. Todd-Brown

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Twitter: [@KatheMathBio](https://twitter.com/KatheMathBio) GitHub: <https://github.com/ktoddbrown>

Academic Appointments

*Linus Pauling Distinguished Postdoctoral Research Fellow* June 2015 – Present

Mentors: Nancy Hess, Vanessa Bailey, and Tim Scheibe

Pacific Northwest National Laboratory. Richland, Washington.

*Postdoctoral Research Fellow* February 2015 – June 2015

Vanessa Bailey’s Lab, (co-mentors: Nancy Hess, and Tim Scheibe), Microbiology Group, Biological Sciences Division

Pacific Northwest National Laboratory. Richland, Washington.

*Postdoctoral Research Fellow* January 2014 – December 2014

Yiqi Luo’s Lab, Department of Microbiology and Plant Biology

University of Oklahoma. Norman, Oklahoma.

*PhD Candidate* July 2008 – December 2013

Steven Allison’s Lab, Department of Ecology and Evolutionary Biology

University of California, Irvine. Irvine, California.

*Research Assistant* September 2006 – May 2008

Shaun Purcell’s Lab, Psychiatric and Neurodevelopmental Genetics Unit

Massachusetts General Hospital. Boston, Massachusetts.

*Higher Education Research Experiences (HERE) Intern* September 2005 – Dec. 2005

Stan Wullschleger’s Lab (co-mentor: W. Mac Post), Plant Systems Biology Group, Environmental Sciences Division

Oak Ridge National Laboratory. Oak Ridge, Tennessee.

Education

*PhD in Earth System Science* December 2013

University of California, Irvine

Advisor: Steven D. Allison

Dissertation title: Soil carbon dynamics: global model evaluation, predictions, and new mechanisms.

*Bachelor’s of Science in Mathematics* December 2004

Harvey Mudd College

Thesis Advisor: L. de Pillis

Thesis title: Mathematics model of early state tumor growth

Capstone/Clinic project advisor: Michael Raugh

Capstone/Clinic title: Expert decision models with Excel with Fair Isaac Corp.

Publications

1. **Todd-Brown K E O**, Zheng B, Crowther T W. Field-warmed soil carbon changes imply high 21st century model uncertainty. *Biogeosciences Discussion.* doi: [https://doi.org/10.5194/bg-2018-72](https://www.biogeosciences-discuss.net/bg-2018-72/). *in open review.*
2. Bailey V, Bond-Lamberty B, DeAngelis K, Grandy A, Hawkes C, Heckman K, Lajtha K, Phillips R, Sulman B, **Todd-Brown K**, Wallenstein W. Soil carbon cycling proxies: Understanding their critical role in predicting climate change feedbacks. *Global Change Biology.* doi: [https://doi.org/10.1111/gcb.13926](https://dx.doi.org/10.1111/gcb.13926). 2017
3. Harden J W, Hugelius G, Ahlström A, Blankinship J C, Bond-Lamberty B,Lawrence C, Loisel J, Malhotra A, Jackson R B, Ogle S, Phillips C, Ryals R, **Todd-Brown K**, Vargas R, Vergara S E, Cotrufo M F, Keiluweit M, Heckman K A, Crow S E, Silver W L, DeLonge M, and Nave L. Pathways for the science community to characterize the state, vulnerabilities, and management opportunities of soil organic matter. *Global Change Biology.* doi: [https://doi.org/10.1111/gcb.13896](https://dx.doi.org/10.1111/gcb.13896). 2017
4. LuoY, ShiZ, Lu C, XiaJ, LiangJ, JiangJ, WangY, KCM, SmithM J, JiangL, AhlströmA, ChenB, HararukO, HastingsA, HoffmanF, MedlynB, NiuS, RasmussenM, **Todd-BrownK**, WangY-P. A theory on terrestrial carbon storage dynamics and its applications*. Biogeosciences.* doi: [https://doi.org/10.5194/bg-14-145-2017](http://www.dx.doi.org/10.5194/bg-14-145-2017). 2017.
5. Crowther, T W, **Todd-Brown, K E O,** Rowe, C W, Wieder, W R, Carey, J C, Machmuller, M B, Snoek, L B, Fang, S, Zhou, G, Allison, S D, Blair, J M, Bridgham, S D, Burton, A J, Carrillo, Y, Clark, J S, Classen, A T, Dijkstra, F A, Elberling, B, Emmett, B, Estiarte, M, Frey, S D, Guo, J, Harte, J, Jiang, L, Johnson, B R, Kröel-Dulay, G, Larsen, K S, Laudon, H, Lavallee, J M, Luo, Y, Lupascu, M, Ma, L N, Marhan, S, Michelsen, A, Mohan, J, Niu, S, Pendall, E, Peñuelas, J, Pfeifer-Meister, L, Poll, C, Reinsch, S, Reynolds, L L, Schmidt, I K, Sistla, S, Sokol, N W, Templer, P H, Treseder, K K, Welker, J M, Reich, P, Bradford, M A. Quantifying global soil carbon losses in response to warming. *Nature*. doi: [https://doi.org/10.1038/nature20150](http://www.nature.com/nature/journal/v540/n7631/full/nature20150.html). 2016.
   * **40+ citations**
6. Yan Z, Liu C, **Todd-Brown K E**, Liu, Y, Bond-Lamberty, B, Bailey, V L. Pore-scale investigation on the response of heterotrophic respiration to moisture conditions in heterogeneous soils. *Biogeochemistry.* doi: [https://doi.org/10.1007/s10533-016-0270-0](http://dx.doi.org/10.1007/s10533-016-0270-0). 2016.
7. Phillips C L, Bond-Lamberty B, Desai A, Lavoie M, Risk D, Tang J, **Todd-Brown K**, Vargas R. Soil respiration measurements are under-utilized for interpreting and modeling terrestrial carbon cycling. *Plant and Soil.* doi: [https://doi.org/10.1007/s11104-016-3084-x](http://dx.doi.org/10.1007/s11104-016-3084-x). 2016.
8. Rasmussen, M, Hastings, A, Smith, M, Agusto, F, Chen-Charpentier B, Hoffman, F, Jiang, J, **Todd-Brown, K**, Wang, Y, Wang, Y P, Luo Y Q. Transit times and mean ages for nonautonomous and autonomous compartmental systems. *Journal of* *Mathematical Biology.* doi: [https://doi.org/10.1007/s00285-016-0990-8](http://dx.doi.org/10.1007/s00285-016-0990-8). 2016.
9. Wang, Y P, Jiang, J, Chen-Charpentier, Agusto, F B, Hastings, A, Hoffman, F, Rasmussen, M, Smith, M J, **Todd-Brown, K**, Wang, Y, Xu, X, Luo, Y Q. Responses of two nonlinear microbial models to warming and carbon input. *Biogeosciences*. doi: [https://doi.org/10.5194/bg-13-887-2016](http://dx.doi.org/10.5194/bg-13-887-2016). 2016.
10. Luo, Y, Ahlström, A, Allison, S D, Batjes, N H, Brovkin, V, Carvalhais, N, Chappell, A, Ciais, P, Davidson, E A, Finzi, A, Georgiou, K, Guenet, B, Hararuk, O, Harden, J W, He, Y, Hopkins, F, Jiang, L, Koven, C, Jackson, R B, Jones, C D, Lara, M J, Liang, J, McGuire, A D, Parton, W, Peng, C, Randerson, J T, Salazar, A, Sierra, C A, Smith, M J, Tian, H, **Todd-Brown, K E O**, Torn, M, van Groenigen, K J, Wang, Y P, West, T O, Wei, Y, Wieder, W R, Xia, J, Xu, X, Xu, X and Zhou, T. Towards more realistic projections of soil carbon dynamics by Earth system models. *Global Biogeochemical Cycles*, doi: [https://doi.org/10.1002/2015GB005239](http://dx.doi.org/10.1002/2015GB005239). 2015.
    * **40+ citation**
11. Wieder, W, Allison, S, Davidson, E, Geogiou, K, Hararuk, O, He, Y, Hopkins, F, Luo, Y, Smith, M, Sulman, B, **Todd-Brown, K**, Wang, Y, Xia, J, Xu, X. Explicitly representing soil microbial processes in Earth system models. *Global Biogeochemical Cycles,* doi:[https://doi.org/10.1002/2015GB005188](http://doi.wiley.com/10.1002/2015GB005188)*.* 2015.
12. Goll, D S, Brovkin, V, Liski, J, Raddatz, T, Thum, T, **Todd-Brown, K E O.** Strong dependency of CO2 emissions from anthropogenic land cover change on soil parameterization and initial land cover. *Global Biogeochemical Cycles,* doi: [https://doi.org/10.1002/2014GB004988](http://doi.wiley.com/10.1002/2014GB004988)*.* 2015.
13. Wieder, W, Cleveland, C, Smith, W, **Todd-Brown, K**. Future productivity and carbon storage limited by terrestrial nutrient availability. *Nature Geoscience*, doi:[https://doi.org/10.1038/ngeo2413](http://dx.doi.org/10.1038/ngeo2413). 2015.

* Wieder, W, Cleveland, C, Smith, W, and **Todd-Brown, K**: Reply to “Land unlikely to become large carbon source,” *Nature Geoscience*, doi:[https://doi.org/10.1038/ngeo2606](http://dx.doi.org/10.1038/ngeo2606). 2015.
* **80+ citations**

1. **Todd-Brown, K E O**, Randerson, J T, Hopkins, F, Arora, V, Hajima, T, Jones, C, Shevliakova, E, Tjiputra, J, Volodin, E, Wu, T, Zhang, Q, and Allison, S D. Changes in soil organic carbon storage predicted by Earth system models during the 21st century. *Biogeosciences*, 11, 2341-2356, doi:[https://doi.org/10.5194/bg-11-2341-2014](http://dx.doi.org/10.5194/bg-11-2341-2014), 2014.

* **60+ citations**

1. **Todd-Brown, K E O**, Randerson, J T, Post, W M, Hoffman, F M, Tarnocai, C, Schuur, E A G, and Allison, S D: Causes of variation in soil carbon simulations from CMIP5 Earth system models and comparison with observations, *Biogeosciences*, 10, 1717–1736, doi:[https://doi.org/10.5194/bg-10-1717-2013](http://dx.doi.org/10.5194/bg-10-1717-2013), 2013.
   * **190+ citations**
2. **Todd-Brown, K E O**, Hopkins, F M, Kivlin, S N, Talbot, J M, and Allison, S D: A framework for representing microbial decomposition in coupled climate models, *Biogeochemistry*, 109, 19–33, doi:[https://doi.org/10.1007/s10533-011-9635-6](http://dx.doi.org/10.1007/s10533-011-9635-6), 2012.
   * **90+ citations**
3. Sklar, P, Smoller, J W, Fan, J, Ferreira, M A R, Perlis, R H, Chambert, K, Nimgaonkar, V L, McQueen, M B, Faraone, S V, Kirby, A, de Bakker, P I W, Ogdie, M, Thase, M, Sachs, G, **Todd-Brown, K**, Gabriel, S, Sougnez, C, Gates, C, Blumenstiel, B, Defelice, M, Ardlie, K, Franklin, J, Muir, W, McGhee, K, Macintyre, D, McLean, A, Vanbeck, M, McQuillin, A, Bass, N, Robinson, M, Lawrence, J, Anjorin, A, Curtis, D, Scolnick, E, Daly, M, Blackwood, D, Gurling, and H, Purcell, S: Whole-genome association study of bipolar disorder, *Molecular Psychiatry*, 13(6), 558–569, doi:[https://doi.org/10.1038/sj.mp.4002151](http://dx.doi.org/10.1038/sj.mp.4002151), 2008.
4. Purcell, S, Neale, B, **Todd-Brown, K**, Thomas, L, Ferreira, M A R, Bender, D, Maller, J, Sklar, P, de Bakker, P I W, Daly, M J, and Sham, P C: PLINK: A Tool Set for Whole-Genome Association and Population-Based Linkage Analyses, *American Journal of Human Genetics*, 81(3), 559–575, doi:[https://doi.org/10.1086/519795](http://dx.doi.org/10.1086/519795), 2007.
   * **10,000+ citations**

Publications in review

1. Yan Z, **Todd-Brown K E**, Liu, Y, Bond-Lamberty B, Bailey V L, Liu C. A Moisture Function of Soil Heterotrophic Respiration Derived from Pore-scale Mechanisms. *Nature Communications.* *in review.*

Publications in prep (available on request)

1. **Todd-Brown, K E O**, Mayes, M, Hess, N, Jastrow, J D, Manzoni, S, Scheibe, T, Schimel, J, Smith, M J, Smith P, Talbot, J, Wieder, W R, and Bailey V. Process explicit biogeochemistry models, new data streams, and the need for scaling: the pore to globe future of soils. *In prep*

Presentations (invited)

1. I have a number! Now what? Todd-Brown, Ecological Society of America, Portland, OR. 6-11 August 2017.
2. Next-generation soil decomposition models: where we are and where we are going. Todd-Brown K. Talbot, Finzi, and Dietze Labs, Boston University. 3 August 2016.
3. Micro-scale terrestrial decomposition modeling. Todd-Brown K. Division Advisory Committee. lunch seminar. 20 July 2016.
4. Causes of variation in soil carbon simulation from Earth system models. Todd-Brown K. Marine Biological Laboratory, Pacific Northwest National Lab, Sequim, WA. Department Seminar. 3 February 2016.
5. Causes of variation in soil carbon simulation from Earth system models. Todd-Brown K. British Ecological Society Annual Meeting. **Edinburgh, Scotland**. Oral session (**Session keynote**). 13-16 December 2015.
6. Incorporating quantified biological proxies into soil carbon models. Todd-Brown K. Argonne Soil Metagenomics Meeting, Naperville, IL. 21-23 October 2015. Oral session.
7. Modeling the gap: Scaling soil carbon models from microbe to the globe. Todd-Brown K, Mayes M. Ecology Society of America, Baltimore, MD. 10-14 August 2015. Oral session.
8. Soil carbon in Earth system models: benchmarks, predicted changes, and future directions. Todd-Brown K, Joint Global Change Research Institute, College Park, MD. 26 March 2015. Department Seminar.
9. Soil carbon and terrestrial carbon fluxes in Earth system models. Todd-Brown K, Randerson J, Allison S, Luo Y, Smith M, *American Geophysical Union Fall Meeting*, San Francisco, CA. 15-19 December 2014. Oral session.
10. Future direction of soil decomposition in Earth system models. Todd-Brown K. *Modeling Soil Carbon Workshop (NSF RCN-FORECAST workshop)*. Oracle, AZ. 14-17 November 2014.
11. Terrestrial carbon dynamics in Earth system models. Todd-Brown K, *Microbial Group seminar, Pacific Northwest National Laboratory*. Richland, WA. 4 September 2014.
12. Soil carbon in Earth system models. Todd-Brown K, *Representing soil carbon dynamics in global land models to improve future IPCC assessments (NSF RCN-FORECAST workshop)*. Breckenridge, CO. 12-14 June 2014. Oral session.
13. Soil carbon estimated in Earth system models and emerging mathematical questions. Todd-Brown K, *NIMBioS Working Group – Nonautonomous systems and terrestrial carbon cycle*. Knoxville, TN. 17-21 March 2014. Oral session.
14. Changes in soil carbon estimated by Earth system models over the 21st century*.* Todd-Brown K, Randerson J, Hopkins F, Allison S. *American Geophysical Union Fall Meeting*, San Francisco, CA. 9-13 December 2013. Oral session.
15. Starting small: an extracellular-enzyme driven model of a microbial microcosm. Todd-Brown K, Lu L, Allison S. *2nd International Enzymes in the Environment RCN Workshop*, Fort Collins, CO. 15-18 May 2012. Oral session.

Presentations (contributed)

1. Soil warming response: field experiments to Earth system models. K Todd-Brown, M Bradford, W Wieder, T Crowther. *American Geophysical Union Fall Meeting*, New Orleans, LA. 11-15 December 2017. Oral session.
2. Next-generation soil decomposition models: representing ecological process complexity across scales. Todd-Brown K, Mayes M, Hess N, Jastrow J, Manzoni S, Scheibe T, Smith M, Smith A P, Talbot J, Wieder W, Zucker J and Bailey V. *American Geophysical Union Fall Meeting*, San Francisco, CA. 12-16 December 2016. Oral session.
3. Next-generation soil decomposition models: representing ecological process complexity across scales. Todd-Brown K. Unifying Ecology Across Scales: Gordon Research Conference and Seminar. Poster and oral session. 23-29 July 2016.
4. MEM+: a physically linked understanding of microbial explicit decomposition. Todd-Brown K, Mayes M, Hess N, Jastrow J, Manzoni S, Marshall M, Plante A, Scheibe T, Schimel J, Smith M, Smith P, Talbot J, Wieder W, Bailey V. Austin International Soil Modeling Conference. Oral session. 28 March - 1 April 2016.
5. Incorporating functional gene quantification into traditional decomposition models. Todd-Brown K, Zhou J, Yin H, Wu L, Tiedje J, Schuur E, Konstantinidis K, and Luo Y, *American Geophysical Union Fall Meeting*, San Francisco, CA. 15-19 December 2014. Poster session.
6. Evaluating soil carbon in global climate models: benchmarking, future projections, and model drivers. Todd-Brown K, Randerson J, Post W, and Allison S. *American Geophysical Union Fall Meeting*, San Francisco, CA. 2-7 December 2012. Oral session.
7. Evaluating soil carbon in global climate models: How good are the models and what drives model variability? Todd-Brown K, Randerson J, Post W, Allison S. *Ecology Society of America Annual Meeting*, Portland, OR. 6-10 August 2012. Poster session.
8. Analysis of below ground carbon in global climate models (CMIP5) *DataONE: ILAMB Working Group*, Santa Barbara, CA. 17 November 2011. Oral session.
9. Microbial cost of carbon degrading extracellular enzymes: A microcosm and mechanistic modeling approach Todd-Brown K, Lu L, Allison S. *Ecology Society of America Annual Meeting*, Austin, TX. 7-12 August 2011. Oral session.
10. Modeled carbon respiration of microbial communities with explicit enzyme representation. Todd-Brown K and Allison S. *American Geophysical Union Fall Meeting*, San Francisco, CA. 14-18 December 2009. Poster session.
11. Optimizing Micro-scale Models of Soil Enzyme Diffusion. Todd-Brown K and Allison S. *American Geophysical Union Fall Meeting*, San Francisco, CA. 14-19 December 2008. Poster session.
12. Computational Tools for Whole Genome Association Analysis: PLINK, gPLINK and Haploview, Todd-Brown K, Thomas L, Bender D, Maller J, de Bakker P, Ferreira M, Neale B, Sham P, Daly M, Purcell S. *World Congress on Psychiatric Genetics XV*, New York City, NY. 7-11 October 2007. Poster session and short presentation.
13. Novel computational and statistical approaches to whole genome association analysis. Todd- Brown K, Neele B, Daly M, Sham P, Purcell S, *Society for Industrial and Applied Mathematics Conference on Computational Science and Engineering*, Costa Mesa, CA. 19-23 February 2007. Poster session.

Presentations (co-author, a selection)

1. Toward a standardized soil carbon database platform in the US Critical Zone Observatory Network. Fillery T, Marini L, **Todd-Brown K**, Malhotra A, Harden J, Kumar P. American Geophysical Union, New Orleans, LA, USA. 14 December 2017.
2. A moisture function of soil heterotrophic respiration derived from pore-scale mechanisms. Yan Z, **Todd-Brown K**, Bond-Lamberty B, Bailey V, Liu C. American Geophysical Union, New Orleans, LA, USA. 14 December 2017.
3. Enzyme digestion of dissolved organic matter at the molecular scale. Hess N J, Tfaily M M, Heredia-Langner A, Rodriguez L R, Purvine E A H, **Todd-Brown K E O**. Multi-omics for Microbiomes. Pasco, Washington, USA. 2 August 2017.
4. Characterizing the state, vulnerabilities, and opportunities for detecting changes in soil carbon storage. Harden J, Hugelius G, Vergara S, Lawrence C, Blankinship J, Phillips C, Bond-Lamberty B, **Todd-Brown K**, Vargas R, Ryals R, Ahlstrom A, Loisel J, Ogle S, Malhotra A. 10th International Carbon Dioxide Conference 2017. Interlaken, Switzerland. 20-26 August 2017. Poster session. (Withdrawn)
5. Surprising results from abiotic enzyme digestion of dissolved organic matter at the molecular scale. Hess N, Tfaily M, Heredia-Langnar A, Rodriguez L, Purvine E, **Todd-Brown K**. *American Geophysical Union Fall Meeting*, San Francisco, CA. 12-16 December 2016. Oral session.
6. Pore-Scale Investigation of Organic Carbon Degradation in Soils and Sediments and its Implication to Field Applications. Yan Z, Liu C, Smith A, **Todd-Brown K**, Bailey V. *American Geophysical Union Fall Meeting,* San Francisco, CA. 14-18 December 2015.
7. Unlocking the Physiochemical Controls on Organic Carbon Dynamics from the Soil Pore- to Core-Scale. Smith A, Tfaily M, Bond-Lamberty B, **Todd-Brown K,** Bailey V. *American Geophysical Union Fall Meeting,* San Francisco, CA. 14-18 December 2015.
8. The Destabilization of Protected Soil Organic Carbon Following Experimental Drought at the Pore and Core scale, Smith A, Bond-Lamberty B, Tfaily M, **Todd-Brown K**, Bailey V. *American Geophysical Union Fall Meeting,* San Francisco, CA. 14-18 December 2015.
9. What Does Data Tell Us about Decomposition Model of Soil Organic Matter? Luo Y, Xu X, **Todd-Brown K**, Liang, J. *American Geophysical Union Fall Meeting*, San Francisco, CA. December 2014.
10. Development and application of a benchmarking system for land models (Invited). Lawrence D, Randerson J, Mu M, Hoffman F, Riley W, Koven C, **Todd-Brown K**, Keppel-Aleks G. *American Geophysical Union Fall Meeting*, San Francisco, CA. 9-13 December 2013.

Fellowships and Funding

1. Linus Pauling Distinguished Postdoctoral Fellowship, US$750,000, Pacific Northwest National Laboratory, US Department of Energy, Richland, CA. June 2015 - June 2018.
2. Jenkins Fellowship, US$11,031.50, Earth System Science Department, University of California, Irvine. Spring 2013.

Working groups and workshops

1. [*Pan-microbial Traits Ecology (http://www.nimbios.org/workshops/WS\_microbes.html)*](http://www.nimbios.org/workshops/WS_microbes.html)*, NIMBioS Investigative Workshop,* University of Tennessee Knoxville, TN. 14-16 June 2017.
2. *International Soil Carbon Network, Winter workshop*, San Carlos, CA. 27 February – 3 March, 2017. (**Invited**)
3. *Gaining Ground—Soil as a Renewable Resource*, White House Office of Science and Technology, Washington, DC. 1 August 2016. (**Invited**)
4. *The carbon cycle interagency working group*. Boulder, CO. 14-18 March 2016. (**Invited**)
5. *Nonautonomous systems and terrestrial carbon cycle – NIMBios Working Group*. Knoxville, TN. 17-21 March 2014; 17-21 November 2014; 27-31 July 2015. (**Invited**)
6. *DataOne: Evaluation, visualization, and analysis working group*. Santa Barbra, CA; Park City, UT. 13-17 November 2011; 12-15 May 2014. (**Invited**)

Selected Public Codebases

1. *SOC-DRaHR,* Open community project with International Soil Carbon Network to aggregate soil carbon data for ingestion into R and harmonization scripts. (2017-present) Available: <https://github.com/ISCN/SOC-DRaHR>
2. *RHWSD*, R code for loading and regridding the soil carbon stock map from the Harmonized World Soil Database. (2015) Available: <https://github.com/ktoddbrown/GlobalRegrid_RHWSD>
3. *RCMIP5*, R package for working with CMIP5 Earth system model results. Co-developed with Ben Bond-Lamberty (2015) Available: CRAN and <https://github.com/JGCRI/RCMIP5>

\*For a complete list see: <https://github.com/ktoddbrown>

Service

* Data coordinator. [International Soil Carbon Network (http://iscn.fluxdata.org/)](http://iscn.fluxdata.org/). 2017-present
* Reviewer for: *Nature,* *PNAS, Ecology, Ecology Letters, Global Change Biology, Biogeosciences (EGU), Nature Climate Change, Nature Geoscience, Ecological Applications, Scientific Reports, Ecological Modeling, Soil Biology and Biochemistry, New Phytologist, Tellus B, Biogeochemistry, Plant and Soil, Journal of Geophysical Research – Biogeosciences, Geoscientific Model Development, Geoderma Regional, R Journal, Global Change Biology – Bioenergy* 
  + 2018 (7); 2017(8); 2016 (10); 2015 (7); 2014 (12); 2013 (5); 2012 (3)
* Subject Editor (regular reviewer) *Soil Biology and Biochemistry*
  + 2018
* Workshop organizer and lead presenter:
  + “Data hacking for permafrost soils”. Texas A&M, College Station, TX. 7-8 May 2017.
  + “Data hacking: Recovering the long tail of soils data” International Soil Carbon Network and Permafrost Carbon Network All Hands Meeting, New Orleans, LA. 11 December 2017.
* Proposal review panel member for:
  + *DOE Office of Science Graduate Student Research Program*, 20 July 2017
  + *NSF Macrosystems Biology and Early NEON Science Panel*, 8-10 March 2017
  + *DOE Earth System Science Funding Opportunity*, 24-25 March 2015
  + *DOE Terrestrial Ecosystem Science program (Pacific Northwest National Laboratory)*, 20 May 2014
* Conference session organizer:
  + “Soil organic carbon dynamics modeling” International Soil Modeling Consortium. **The Netherlands**. 5-7 November 2018.
  + “Terrestrial-Soils and Biogeochemical Interactions” breakout session, Environmental System Science Principal Investigators Meeting, Washington, DC. 24-26 April 2017.
* Search committee:
  + Environmental Molecular Sciences Laboratory’s Terrestrial Ecosystem Science Postdoctoral Fellowship, Pacific Northwest National Laboratory (2016, 2017).
  + Pauling Distinguished Postdoctoral Fellowship (2016, 2017).
* Meeting summery report author:
  + ***Todd-Brown, K*** *and Y* Luo. Representing soil carbon dynamics in global land models to improve future IPCC assessments, *EOS Transactions American Geophysical Union.* 95(41), 371, doi:[10.1002/2014EO410005](http://dx.doi.org/10.1002/2014EO410005), 2014.
* Graduate Student Representative, Earth System Science Dept. University of California, Irvine. Fall 2010 - Fall 2011.

Public outreach

* Blog posts
  + **Todd-Brown K.** [Digging for data gold in soils](http://blog.globalsoilbiodiversity.org/article/2017/11/28/digging-data-gold-soil). *Beneath our feet*, Global Soil Biodiversity Initiative, 30 November 2017.
  + **Todd-Brown K.** [Soil modeling for everyone: from concept to simulations](http://blog.globalsoilbiodiversity.org/article/2017/10/11/soil-modeling-everyone-concept-simulations). *Beneath our feet*, Global Soil Biodiversity Initiative, 11 October 2017.
  + Heard S, **Todd-Brown K**. [Why would anyone want to be an (Associate) editor anyway?](https://scientistseessquirrel.wordpress.com/2015/08/27/why-would-anyone-want-to-be-an-associate-editor-anyway/) *Scientist sees squirrel*, 27 August 2015.
* Outreach video
  + [Kathe Todd-Brown studies how dirt breaths](https://www.youtube.com/watch?v=CP06nY0U2UU), Women in science series, produced by Eric Francaville at Pacific Northwest National Lab. 2017.
* Media Interviews
  + Warming soils may belch much more carbon. Sumner T. Science News. <https://www.sciencenews.org/article/warming-soils-may-belch-much-more-carbon> 9 March 2017.
* Science reviewer for EGU Planet Press
  + “Radioactive truffles?” 4 May 2016

Teaching and mentoring

* Software (<https://software-carpentry.org/>) and Data Carpentry (<http://www.datacarpentry.org/>) certified instructor
  1. Software Carpentry, co-instructor (R ecology), University of Illinois Chicago, IL. 19-20 October 2017.
  2. Data Carpentry-based, ½ day workshop instructor (R ecology), Pacific Northwest National Lab, Richland, WA. 7 July 2017.
  3. Software Carpentry, co-instructor (git), Pacific Northwest National Lab, Richland, WA. 4-5 May 2017.
* Laboratory Mentor (supervised student intern)
  1. Emily Schmidt (Young Women In Science, Summer 2017).
* Math tutoring with the Battelle Math Team (high school and college student drop-in). Richland Public Library, Richland, WA. (2hr each)
  1. 6 January 2018, 2 February 2018
  2. 18 November 2017; 7 October 2017
  3. 16 January 2016; 9 April 2016; 7 May 2016; 24 September 2016; 8 October 2016; 5, 12, 19 November 2016.
  4. 24 October 2015; 21 November 2015; 5 December 2015.
* Invited speaker for Girls Who Code. Richland Public Library, Richland, WA.
  1. 1 February 2018
  2. 28 September 2017
* Classroom science talks
  + 13 February 2017 (6th grade, Clyde Mann, Warm Springs, CA)
* Delta High School mentor for Senior Research Methods
  + 14 October 2016, October 27, 2016
* Letter to a Pre-Scientist, <http://www.prescientist.org/> Pen-pal program linking students to scientists (4 letters annually)
  + 2016
* Math of Earth system science. Battelle Math Team event at Take Your Daughters and Sons to Work Day. (8-15yr old, 20 students) 28 April 2016.
* MentorNet online mentor: weekly contact with mentoree
  + 2016 (2)
* Other R education:
  + R study group, Pacific Northwest National Labs, Richland, WA. July – October 2015
    - Co-organizer and mentor (weekly meeting)
  + R introduction, Post-Doctoral Council Special Topics Seminar, Pacific Northwest National Labs, Richland, WA. 27 May 2015.
* STEM Mentoring Café, The REACH, Kirkland, WA, Mentor (spoke with 3x8 girls about science and careers in STEMs), <https://youtu.be/LVPGb3JUX7U>, 22 April 2015.
* Girl Scouts of Western Oklahoma, Norman, OK, Volunteer (lead activities and planning in 2 overnight events for over 100 girls), Winter 2014 – Spring 2014.
* WitsOn, online mentor for undergraduate women in STEM, Fall 2012.
* Climate, Literacy Empowerment, And iNquiry (CLEAN) Education, Irvine, CA.
* Board Member, 2012.
* Scheduler (organized over 20 presentations), Fall 2010 – Spring 2012.
* Curriculum developer (1 new presentation developed, 3 major revisions to existing presentations), Fall 2009 – Spring 2012.
* Presenter (spoke on climate science to 15 K-12 classes with 500+ students and 2 teacher workshops), Summer 2009 – Fall 2011.
* University of California, Irvine. Teaching Assistant

1. ESS 60B: Local and Regional Environmental Issues, Winter 2011.
2. ESS 55: Field Methods, (lab course), Spring 2010.
3. ESS 1: Earth System Science, Fall 2010.

* Climate, Literacy Empowerment, And iNquiry (CLEAN) Education, Irvine, CA.
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